REMARKS

In section 3 of the Official Action, the Examiner asserts that the subject matter of independent claim 15 and dependent claims 17-29 is obvious over the applicants' admitted prior art (AAPA), as shown in Figure 1 of the present application, in view of U.S. Patent Publication No. 2003/0152072 to Guild, et al and the article by Noirie, et al.

The Examiner asserts that the combination of AAPA, Guild and Noirie discloses a system as shown in Figure 01 in the Official Action. Applicants note that this Figure 01 is the same figure that the Examiner indicated was disclosed by the combination of only the AAPA and Guild in the previous Official Action.

Hence, it appears that the Examiner was persuaded by the applicants' previous argument provided in the response of August 26, 2008, that the subject matter of the claims is patentable over the combined disclosures of AAPA in view of Guild since the Examiner saw fit to rely on the newly cited Noirie article.

Yet, as will be further explained below, Noirie discloses a particular configuration of switching stages, multiplexers and demultiplexers. It is noted that ***none*** of the multiplexers and demultiplexers shown in Noirie as appearing between the relevant amplifier stages are reflected in Figure 01. Further, Figure 01 was ***not*** modified to take into account the teachings of Noirie.

It is respectfully submitted that the combination of AAPA , Guild and Noirie would not disclose a system as shown in Figure 01. In fact, as will be explained in further detail below, the particular structure of the optical cross-connect shown in Figure 1 of Noirie would, if combined with the optical cross-connect of Guild and/or AAPA render Guild et al and/or AAPA ***inoperable*** for its intended purpose.

Noirie discloses a multi-granularity optical cross-connect (see section 2: "Optical Cross-Connect Architecture") for routing different granularities at the same time. Noirie explicitly considers the simultaneous routing of wavelengths, bands and fibers using the architecture of the optical cross-connect OXC shown in Figure 1.

Noirie describes how the OXC is formed of three switching stages, one for each level of granularity, i.e., a fiber switching stage, a band switching stage and a wavelength switching stage. As illustrated in Figure 1, and as described in the accompanying text, connections between these stages are made via multiplexers and demultiplexers (Mux and Demux). The Mux and Demux are essential for the operation of the multi-granularity optical cross-connect, in converting between the different granularities switched by each stage.

Independent claim 15 includes the limitation that the switching matrix comprises a Clos network. Pivotal to the Examiner's assertion of obviousness is his position that the architecture shown in Figure 1 of Noirie can be viewed as a Clos network. However, this assertion is respectfully refuted.

At no point is the switch architecture shown in Figure 1 of Noirie ever described as a Clos network, nor is it ever described in the terminology normally used for Clos networks. In fact, due to the use of multiplexers and demultiplexers between the stages (that are essential for the multi-granularity optical cross-connect in Noirie), the optical cross-connect architecture shown in Figure 1 of Noirie would not be viewed as a Clos network despite the Examiner's assertions.

The Examiner further argues that since Guild uses four switching matrices to form the OXC architecture, this provides the skilled person with motivation to explore other numbers of switching matrices to enable the full connectivity between the client's and the input ports of the

switch interface unit. The Examiner then goes on to assert that Noirie discloses that the three-stage switching matrix can perform the wavelength routings and can meet the capacity increase, and the system is less complex and the cost can be reduced. This assertion is also respectfully refuted.

As noted in applicants' previous response, Guild describes how the optical cross-connect shown in Figure 8 includes a Clos network 401 consisting of primary (402, 403), secondary (404, 405) and tertiary (406, 407) switching stages used in the ***add and drop paths*** (408, 409) respectively. It should be noted that the switch interface unit (SIU410) within the optical cross-connect 400 shown in Figure 8 does not form a stage of the Clos network 401. The Clos network is described as a single entity that performs a specific function in Guild, in allowing full interconnectivity between all the incoming channels that can be dropped locally and the transponders (see paragraph [0061]), and efficient sharing and utilization between the transponders (see paragraph [0062]). There is no hint that the skilled person would be motivated to arbitrarily combine the functions of the SIU 410 and the Clos network 401 by use of a network as shown in Figure 1 of Noirie.

Indeed, if the Examiner had revised the Figure 01 shown in the Official Action to accommodate any of the actual structure illustrated in Figure 1 of Noirie et al, then it is respectfully submitted that it would have been readily apparent that the resulting combination would ***not function*** properly due to the Mux and the Demux required by Noirie.

It will be noted that in the AAPA shown in Figure 1 of the present application, the operation on the switching matrices is performed on individual wavelengths (as denoted, lambda-1 to lambda-N). Both the inputs to the switching matrices, the outputs of the switching matrices, and the add and drop inputs and outputs are all on a single wavelength basis, i.e., a ***single level of***

granularity. This is in contrast to the ***multi-granularity*** optical cross-connect shown in Figure 1 of Noirie, in which the input and the output of the space switch FXC is done on a fiber basis, i.e., with each fiber carrying multiple bands (those bands then being split up from each fiber for switching in the band switching stage).

The particular structure shown in Guild is referred to as performing a particular function. Although Guild appears to be mute in respect of the level of granularity on which the switching is performed, it is noted that ***no*** demultiplexers or multiplexers are illustrated in Figure 8 of Guild within the Clos network 401, or as appearing between the add and drop connections 408 and 409. It is, therefore, implicit that Guild does ***not*** teach the use of a multiple-granularity optical cross-connect in respect of Figure 8, and that hence the OXC of Guild is performed on a single level of granularity.

Modification of the OXC of AAPA, or the OXC of Guild, to incorporate the architecture of the multi-granularity optical cross-connect shown in Figure 1 of Noirie would thus ***increase*** cost and complexity (due to the additional multiplexers and demultiplexers required by Noirie between switching stages), and hence the skilled person would ***not be motivated to do so***.

Further, modification of the OXC of AAPA, or the OXC of Guild, to incorporate the architecture of the multi-granularity optical cross-connect shown in Figure 1 of Noirie would render the relevant OXC inoperable for its intended purpose (as it would not then be able to provide the relevant inputs and outputs on a single level of granularity).

The subject matter of claim 15, and all claims dependent thereto, is thus both novel and inventive over the cited prior art. The grant of a patent is hereby respectfully requested.

Wherefore, a favorable action is earnestly solicited.

Respectfully submitted,

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